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(54) Vacuum skin packaging

(57) The package, which provides protection for a meat product 24, allows relatively easy reading of printed matter relating to the product on either side of the package, a simple method for sealing the product into the package, and a good clear display of the product; is formed by placing the product on a card 10, e.g. of polypropylene printed on both sides 12, 14, the product being protected from contamination from the printing ink by a gas barrier layer 16 and then vacuum sealing a gas barrier top layer 26 over the product to the card. The printing 14 is disposed around the product on the border of the card which may be provided with a window 32 to allow viewing of the bottom of the product (Figs. 3 and 4).

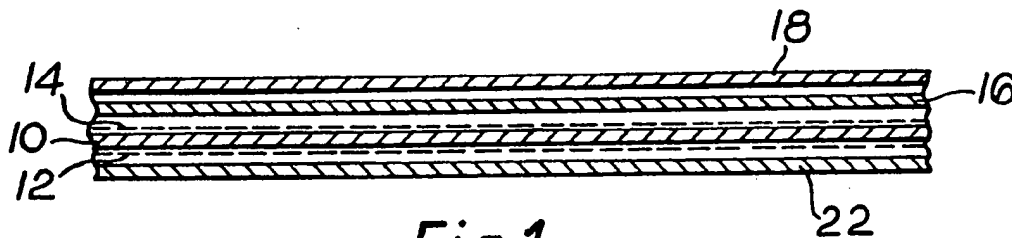


Fig. 1

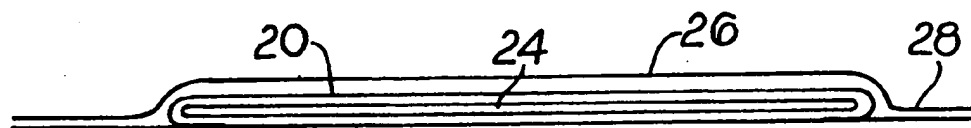
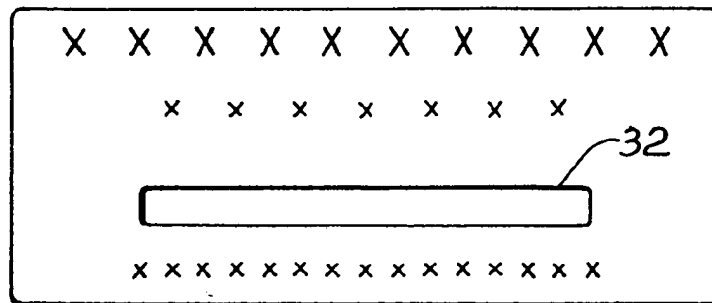
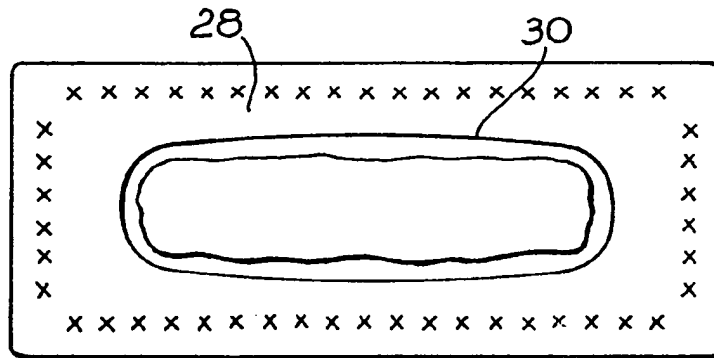
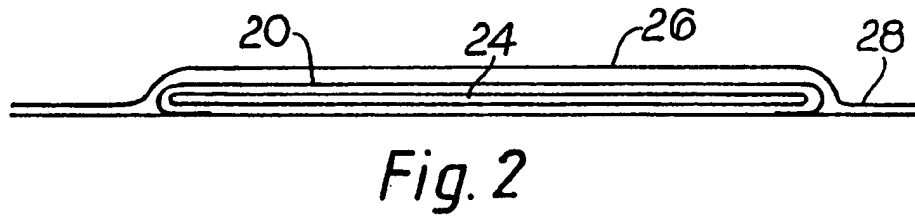
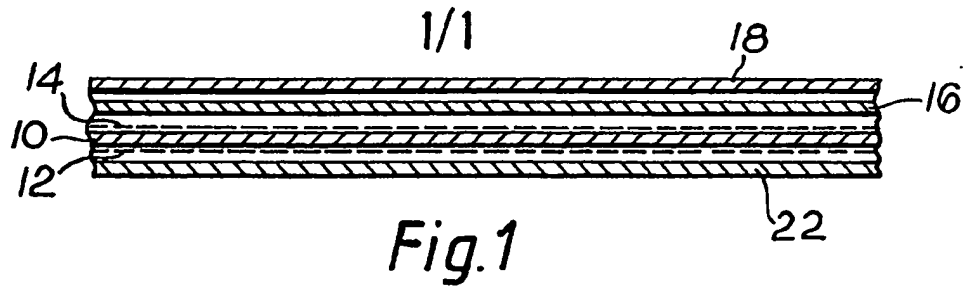


Fig. 2

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SPECIFICATION

Vacuum skin packaging

5 The present invention relates to vacuum skin packaging and more particularly to packaging which will display, for example, a sliced meat or fish product whilst protecting the product against bacterial and physical damage thereby
 10 preserving the good appearance of the product over a desired life time.

A known method of packaging meat products is to place the product on a tray and to wrap the tray and product in a plastic film to
 15 preserve the product. A label is then stuck on the top surface of the package identifying the contents and price of the package. There are two principle disadvantages of this type of packaging. Firstly it is expensive since the tray
 20 has to be produced, delivered and there are several operations in placing the tray on a conveyor belt packaging the product and tray in film and then labelling. Secondly, the product, if a meat product, will tend to "ooze"
 25 liquid and cause discolouration of the tray thereby giving an unattractive product.

For sliced meat products such as bacon therefore, a different packaging system is used to produce a flat package which comprises a plastic "bag" formed round the sliced
 30 meat, evacuated and then sealed. A printed label may be added either by sticking onto the package or by printing directly onto the plastic. Such packs have the disadvantage that the product is not well protected against damage because the package is flexible and the print is not easily read if the contents are an awkward shape since the printing will conform to the internal shape.

40 Because of the problem of reading the printed matter it is now common practice to include a separate header portion of this type of package in order to ensure that safety warnings concerning, for example, the shelf
 45 life of the product and government regulations on the content of, for example, preservatives is clearly visible to the purchaser. This though solving the problem of legibility of the printed matter and allowing reading from both sides of the package, adds to the cost of the package.

The separate header can be provided on a card which is printed on one or both sides and which is sealed between upper and lower
 55 films to form a separate compartment to the compartment containing the meat product. In an alternative known system the card does not have a header portion and is only large enough to carry the meat product. The disadvantage of this is that the written matter is only visible on one side of the card.

It is an object of the present invention to provide a package for a product such as meat, fish etc., which enables printed matter
 60 to be easily read from both sides of the pack-

age with out requiring a separate header portion and which package is readily sealed to provide an inexpensive packaging method.

According to the present invention there is
 70 provided a vacuum skin package for a meat product including

- (i) a flexible card,
- (ii) printing on a first side of said card;
- (iii) printing on the second side of said card;
- 75 (iv) a complex gas barrier layer on top of the printing on the second side of the card,
- (v) an uppermost gas barrier, skin, vacuum fused to said complex barrier layer to seal said meat product placed onto the complex barrier layer in an oxygen free or other gas impermeable manner,
- 80 in which flexible card is sized such that the printing on the second side of the card is visible around the meat product,
- 85 in which the complex barrier layer on top of the printing on said second side of said card comprises an oxygen or gas impermeable barrier and on its surface opposite to said printing has properties suitable for vacuum skin fusion sealing of said uppermost oxygen or gas impermeable barrier skin to said card.
- 90 Hereinafter, for the purpose of the present invention, the term meat product includes other perishable substances such as fish either in sliced or unsliced form.
- 95 The card, therefore, forms the base of the vacuum pack, allowing printing on both sides of the pack and lowering the cost of the final package by eliminating the need for a separate outerpack around the card.
- 100 The card is preferably made from polypropylene thereby providing a fairly stiff base. The thickness of the polypropylene is preferably 8 to 10 mil.
- 105 The card is preferably provided with an upper layer of Surlyn (R.T.M.) which provides the complex barrier layer to prevent the ink on the upper surface of the card from contaminating the meat product and to provide a top layer suitable for fusion sealing under vacuum to a top web to complete the package. The Surlyn layer is preferably approximately 1 mil thick.
- 110 Alternatively the complex barrier layer may be formed by, a layer of P.V.D.C. on top of the card to provide a gas barrier layer and a further layer of E.V.A. (Ethylene Vinyl Acetate) or polythene is provided on the top of this layer to provide an uppermost layer suitable for fusion sealing under vacuum to a top web to complete the package. This laminate effectively prevents the ink on the top surface from contaminating the meat products.
- 115 The card may be provided with a polythene or other suitable coating on its under surface to protect the print on the first surface.
- 120 The printed matter on the second surface of the card is preferably provided round a border on the outer edges thereof, thereby allowing the meat product to be placed within the border and allowing the printed matter to be visible
- 125
- 130

ible all round the meat product. The uppermost skin thereby seals to the border across the whole width thereof, therefore protecting the printed matter from being obscured by any leaking juices from the meat product.

The present invention also provides a method of vacuum skin packaging in which a card having printed matter on both upper and lower surfaces thereof, and having an oxygen or other gas barrier on its upper surface which is suitable for fusion sealing, is placed on a moving conveyor belt at a first station, a meat product is placed on top of the card in a required position covering a central portion of the card and leaving a complete border round the central portion, in which the conveyor belt moves through a second station comprising a vacuum packaging machine in which machine a top skin is fused to the border of the card. Embodiments of the present invention will now be described, by way of example with reference to the accompanying drawings in which:

Figure 1 shows a cross-sectional view through the base of a vacuum skin package according to the present invention;

Figure 2 shows a vacuum skin package according to the present invention in side elevation;

Figure 3 shows a plan view from above of the package of Figure 2; and

Figure 4 shows a plan view from below of the package of Figure 2.

With reference now to Figure 1, the base member for the vacuum skin package comprises a card 10 preferably of polypropylene preferably between 5 to 10 mil or more preferably between 8 to 10 mil thick printed as indicated by dotted lines 12, 14 on both sides with matter pertaining to the meat product and information required by the laws of the country into which the product is to be sold.

To the upper surface a first layer 16 of oxygen barrier material or other gas barrier properties is applied, and a further layer 18 suitable for fusion sealing to an upper skin member 20 (see Figures 2) is applied to layer 16.

Alternatively the layers 16 and 18 may be combined together in a single layer of a material which provides the oxygen barrier and is also suitable for fusion sealing. Such material is Surlyn.

A layer 22 may be applied to the bottom surface to protect the printed matter 12.

The layer 16 is preferably of P.V.D.C. and the layer 18 of E.V.A. or polythene to provide the suitable fusion sealing property. The meat product 24 (Figure 2) is placed on top of the board formed by the card and other layers and an upper layer 26 is fusion sealed around this border 28 of the card in a vacuum sealing machine to form a vacuum skin package.

The meat product 24 is, as shown in Figure 3, preferably positioned within a defined cen-

tral area of the board shown by outline 30, therefore ensuring an adequate border 28 for sealing purposes. Printed matter 14 is indicated by the series of "X's".

With reference now to Figure 4, the underneath surface of the complex board may be provided with a window 32 to allow viewing of the product from "below". More information may be carried on the underneath of the package since the available viewable surface area will be greater. Since the complex board will be fairly rigid it will remain flat even after the vacuum skin processing, thereby enabling the information to be easily read.

To assemble the vacuum skin package a series of the boards are placed on a conveyor belt and on each board the meat product is arranged within the border lines 30. The conveyor carries the boards through a vacuum skin packaging machine (not shown) which may be of conventional design and an upper skin is applied to the top of the board and meat product. The air is evacuated and the upper skin fusion sealed at, for example, 100°C to the border. A large surface area of seal is thereby available ensuring an adequate seal.

Alternatively, the package may be filled with an inert gas such as nitrogen, the upper skin then being selected to be impermeable to that gas and the card being provided with a complex layer having suitable gas impermeable qualities.

The board protects the product from being unduly bent and provides an attractive package. It can be printed to show any desired information or advertising. The operation of sealing is simple and performed in a single operation.

The board forms the base of the vacuum pack, thus eliminating the need for a vacuum plastic laminate as an outer pack around the board. This further reduces the packaging materials cost of the total pack.

CLAIMS

1. A vacuum skin package for a meat product including
 - (i) a flexible card,
 - (ii) printing on a first side of said card,
 - (iii) printing on the second side of said card,
 - (iv) a complex gas barrier layer on top of the printing on the second side of the card,
 - (v) an uppermost gas barrier, skin, vacuum fused to said complex barrier layer to seal said meat product placed onto the complex barrier layer in an oxygen free or other gas impermeable manner in which the flexible card is sized such that the printing on the second side of the card is visible around the meat product and in which the complex barrier layer is on top of the printing on said second side of said card comprises an oxygen or gas impermeable barrier and on its surface opposite to said printing has properties suitable for va-

cuum skin fusion sealing of said uppermost oxygen or gas impermeabl barrier skin to said card.

2. A vacuum skin package as claimed in
5 Claim 1 in which the card is made from polypropylene thereby providing a fairly stiff base.

3. A vacuum skin package as claimed in Claim 1 in which the thickness of the polypropylene is preferably 8 to 10 mil.

10 4. A vacuum skin package as claimed in Claim 1, 2 or 3 in which the card is provided with an upper layer of Surlyn which provides the complex barrier layer to prevent the ink on the upper surface of the card from contaminating the meat product and to provide a top
15 layer suitable for fusion sealing under vacuum to the uppermost gas barrier skin to complete the package.

5. A vacuum skin package as claimed in
20 Claim 4 in which the Surlyn layer is approximately 1 mil thick.

6. A vacuum skin package as claimed in Claim 1 in which the complex barrier layer is formed by a layer of P.V.D.C. on top of the
25 card to provide a gas barrier layer and a further layer of E.V.A. (Ethylene Vinyl Acetate) or polythene is provided on the top of this layer to provide an uppermost layer suitable for fusion sealing under vacuum to the uppermost gas barrier skin to complete the pack-
30 age.

7. A vacuum skin package as claimed in any one of Claims 1 to 6 in which the card is provided with a polythene or other suitable
35 coating on its under surface to protect the print on the first surface.

8. A vacuum skin package as claimed in any one of Claims 1 to 7 in which the printed matter on the second surface of the card is
40 provided round a border on the outer edges thereof, thereby allowing the meat product to be placed within the border and allowing the printed matter to be visible all round the meat product, the uppermost skin thereby sealing to
45 the border across the whole width thereof and therefore protecting the printed matter from being obscured by any leaking juices from the meat product.

9. A method of vacuum skin packaging in
50 which a card having printed matter on both upper and lower surfaces thereof, and having an oxygen or other gas barrier on its upper surface which is suitable for fusion sealing, is placed on a moving conveyor belt at a first
55 station, a meat product is placed on top of the card in a required position covering a central portion of the card and leaving a complete border round the central portion, in which the conveyor belt moves through a second station
60 comprising a vacuum packaging machine in which machine a top skin is fused to the border of the card.

10. A vacuum skin package for a meat pr
65 duct substantially as described with reference to the accompanying drawings.

11. A method of vacuum skin packaging a meat product into a package as claimed in Claim 1 substantially as described.

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